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Dekker, H.C.; Smidt, P.

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**THE ADOPTION AND USE OF
TARGET COSTING IN DUTCH LISTED FIRMS**

Henri Dekker

Peter Smidt*

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*Peter Smidt PhD. is senior consultant and researcher at Deloitte & Touch Bakkeninst

Henri Dekker is a researcher for ARCA, Vrije Universiteit Amsterdam

Phone: +3 120 444 6066 Fax: +3 1 20 444 6005 E-mail: hdekker@econ.vu.nl

Abstract

This paper reports the results of a survey study among Dutch listed manufacturing companies on the adoption and use of costing practices that resemble the Japanese target costing concepts. Twenty-two of thirty-two responding firms claimed to use costing practices similar to target costing. The distribution of adoption over industries confirmed the expectation that assembling firms show a relatively high adoption of target costing. The adoption of these techniques appears to be related to an intense competitive and unpredictable environment. Similar to target costing studies in Japan and Germany, the main objective for adopting these techniques in the sample is to reduce costs. The product development and design departments appear to be leading in the target cost management process, while the accounting department is only moderately involved. Finally, the most frequently adopted organizational form for target cost management are team structures, in which multiple functions combine knowledge and capabilities in the product development process.

Keywords: Target costing, adoption, goals, organization, survey, The Netherlands

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1. Introduction

A subject that receives increasing attention in accounting literature is the use of cost information and cost management during product design (Anderson and Sedatole, 1998, Davila, 1999). The major argument for managing costs during product design is that after the product development stage most costs have been 'designed' into the product and can not be influenced anymore. One important technique that can be used for managing product costs during the design stage is target costing (Kato, 1993; Ewert and Ernst, 1999). Target costing is essentially concerned with setting a target cost to be achieved in the product development process, such that a sufficient profit margin is realized when the product is brought to the market. In the literature, target costing is viewed as a strategic management accounting system, as it focuses on long-term cost management efforts (Chenhall and Langfield-Smith, 1998; Ewert and Ernst, 1999; Guilding *et al.*, 2000; Tani, 1995). Target costing can be part of a broader product cost management process, called target cost management, which is concerned with the achievement of a target cost simultaneously with planning, development and detailed design of new products (Tani *et al.*, 1994). Ewert and Ernst (1999) characterize the essence of target costing by three aspects, a *market orientation*, as the selling price is the starting point for determining the target cost, a *coordination function*, as the target cost coordinates the activities of product designers, and *strategic learning*, as it, in interaction with other factors, influences the long-term cost structure.

In literature, target costing and target cost management are often associated with Japanese companies. Empirical research into the practices of target costing has mainly been performed by Japanese researchers for the Japanese situation (Kato, 1993, Tani *et al.*, 1994).¹ Few efforts have been made to investigate whether these practices are also relevant for and do occur in non-Japanese situations (some exceptions are Chenhall and Langfield-

smith, 1998; Guilding *et al.*, 2000; Horvath and Tani, 1997). One could expect that as the drivers for using such methods are not idiosyncratic to Japan (i.e., the desire to realize a profit margin on products, under certain market characteristics), they could also be used in a non-Japanese situation, even though the actual application of such practices may deviate from the 'typical' Japanese way. In this study an attempt is made to investigate the occurrence and application of practices that resemble target costing for Dutch companies listed in 1997 at the Amsterdam Stock Exchange for which such techniques could be relevant.

We were interested in the following exploratory research questions. Do Dutch listed companies use costing techniques similar to the principles of target costing (i.e., a reverse product cost calculation, starting with a market price)? If used, under which circumstances are such techniques more likely to be used? What are the goals that companies try to achieve with these techniques and to what extent are benefits achieved? How is the application of the practice organized? For example, which departments are involved, and what organizational form is used?

For researching these questions a survey was developed that built to a great extent on a previous survey by Tani *et al.* (1994), who explored similar questions for Japanese listed manufacturing organizations.² Answers to these exploratory questions give some insight into the question whether practices resembling target costing occur in a non-Japanese context, and if so, how they are used. However, less insight will be gained into the details of TCM, that consist of elements such as how targets are set, who has which specific role in the setting and achievement of target costs, and which techniques are used for achieving the target, such as value engineering and cost tables (Kato, 1993; Tani *et al.*, 1994). These are questions to be answered in future research. The insights of this study can be used for determining the possibilities and boundaries of future research into these

practices.

The next section provides a short overview of target costing literature related to the previous research questions, and sets the boundaries of our study. Section three discusses the design of the survey study, and in section four the analyses and results are discussed. Section five ends the paper with a conclusion and some avenues for further research.

2. Target costing and target cost management

2.1 Definition

In literature, target costing is viewed as a strategic management accounting system, that is used for the management of product costs (Ewert and Ernst, 1999). This management of target costs is generally referred to as target cost management (from now on TCM), which (in Japan) is concerned with achieving a target cost simultaneously with planning, development and design of new products. For this purpose methods are used, such as cost tables, value engineering, total quality management and interorganisational cost management (Cooper, 1995; Kato, 1993; Tani et al., 1994).

For this study, it was chosen to adopt a broad definition of ‘target costing’, based on its general characteristics, as Dutch companies may have developed and use similar techniques, without knowing its specific theoretical counterpart. In addition, the technique they use may to some extent deviate from the prescriptions or general ideas about target costing in literature, about what these techniques consist of and how they are applied by companies. Therefore, it was deemed important to identify companies that use a reverse costing mechanism in the development of products, in which the attainable selling price and necessary profit margin are used to determine the allowable cost price of a product.

Thus target costing in this study is defined as a technique that uses the following formula to calculate the allowable cost price:

$$\text{Maximum allowable cost price} = \text{attainable selling price} - \text{required profit margin}$$

2.2 The adoption of target costing

The study of Tani *et al.* (1994) found that in 1991 60,6% from their sample of 180 listed Japanese manufacturing firms used some form of target costing. Wijewardena and De Zoysa (1999) found in their sample of 209 Japanese manufacturing companies that of eleven management accounting practices, target costing was perceived as the most important practice used. Even though relatively little is known about the occurrence and actual use of these practices in non-Japanese contexts, one can assume the general idea of target costing may be well applicable in other contexts. Wijewardena and De Zoysa (1999) found that for the 225 Australian manufacturing companies surveyed, target costing ranked only tenth in importance of the eleven management accounting practices studied. The study of Chenhall and Langfield-Smith (1998) found that among 78 large Australian manufacturing companies, 38% claim to use target costing, although, this adoption rate was relatively low compared to the adoption of other accounting practices. The study of Guilding *et al.* (2000) shows that for New Zealand, The United Kingdom, and the United States the adoption rate of target costing is relatively moderate.³ A problem with the latter study is that also non-manufacturing companies have been surveyed for which target costing can be irrelevant, which leads to a lower adoption rate than the other, more generally applicable techniques surveyed (such as budgeting).

Some authors develop contingency arguments to identify circumstances under which the use of these practices are deemed more appropriate or desirable for companies. First, it is argued that target costing is only relevant for manufacturing industries, as these are characterized by product development processes. In particular, assembling industries are argued to benefit from target costing (Horvath and Tani, 1997). Tani *et al.* (1994) found that in assembling industries target costing was heavily adopted. However, target costing was also used in process industries, such as the chemical industry.

According to Tani (1995), Japanese firms have adopted TCM as a response to increasing *environmental uncertainty*. TCM is seen as a cost management system which supports a firm's increasing information processing requirements, when attempting to manage the increasing variability and specificity of factors to be considered in decision making.⁴ Cooper (1995, 1996) and Cooper and Slagmulder (1997) argue that the use of TCM is beneficial under intense competitive pressure, which is created by so-called 'confrontation strategies'. When the *competitive environment* is more fierce, then target costing is an important technique to secure that only profitable products are brought to the market. One important determinant of a firm's competitive position is its cost level (Kato, 1993). Especially when the role of costs is important for a product's success, it can be expected that costs need to be managed more aggressively. Therefore, firms with a strong *cost focus* in their product development efforts will be more inclined to use target costing.

2.3 The goals of target costing

In the literature, target costing is positioned as a cost management system, which implies cost reduction of new products is an important objective. However, the product development process is characterized by multiple, and possibly conflicting goals, such as realizing low cost, high quality, customer satisfaction, and timely introducing the product to

the market (Cooper, 1995; 1996, McMann and Nanni, 1995; Tani *et al.*, 1994). Target costing as a disciplining mechanism contributes to realizing these different goals by having product designers make explicit tradeoffs between them. Its market orientation forces designers to consider explicitly the value of product characteristics in the ‘eyes of the market’, and the price that customers are willing to pay for it (McMann and Nanni, 1995). Value engineering is a coordinating technique for managing these tradeoffs in the design of products. For the Japanese situation, target costing is argued to be used to secure that no unprofitable products are brought to the market and that the optimal trade-off between cost, functionality, and quality is realized (Cooper, 1995).

This existence of multiple differing objectives to be achieved in the product development process leads to the question for which goals companies perceive the use of target costing to be beneficial. This perception of expected benefits induces them to adopt such a practice. And, after adoption, to what extent are these goals actually realized when using target costing?

The literature offers some empirical evidence on these questions. Tani *et al.* (1994) found that for their Japanese sample of manufacturing firms cost reduction was the most important goal when TCM was implemented, then followed by realizing quality, satisfying customer needs and timely introducing new products. When respondents reflected on the present goals of the system, these rankings remained the same, however the average importance of all goals had increased. Horvath and Tani (1997) found in a multiple case study among 10 German adopters of target costing practices, that also they perceived cost reduction as most important, followed by market oriented product development, lead time reduction for product development (time-to-market), and high quality.

2.4 The organization of target costing

An important aspect of Japanese target costing mentioned in literature is the horizontal integration of functions (Cooper and Slagmulder, 1997; Cooper and Yoshikawa, 1994; McMann and Nanni, 1995; Tani, 1995). Horizontal integration usually consists of cross-functional teams, in which multiple functions work together on achieving the target cost. In addition, it can encompass a cooperation with representatives from buyer and/or supplier firms, which is called inter-organizational cost management. As a holistic approach to cost management the cross-functional team brings different types of knowledge and capabilities to the target cost achievement. Typically, the engineering function has the most influential role in these multi-disciplinary teams (McMann and Nanni, 1995).

Tani *et al.* (1994) found that in the TCM teams of Japanese manufacturing firms the engineering functions (Design and Production Technology) and Purchasing were most often members of the team, then followed by 'Development, Marketing, Manufacturing and Product Planning. Accounting was the least involved function. This is in contrast to the German sample of the Horvath and Tani (1997) study, where the controlling function has an important role.

If Dutch companies use practices similar to target costing, it will be interesting to study their organization of the practice. First, which departments are mostly involved in its application? Second, what organizational form is adopted for the application of the practice (e.g., also multi-disciplinary team structures, or other organizational provisions)?

3. The survey study

A survey was developed that focused on the adoption of **cost** management techniques similar to target costing. The study was designed as exploratory, to identify the **occurrence** and use of **such** practices in Dutch companies. It is possible that companies use techniques similar to target costing, without being familiar with the concept. Therefore, in order to assess whether companies use **such** a system, a broad description of the general idea of target costing was provided following the definition in the previous section. Respondents were asked to examine whether their systems **matched** this description. The survey first focused on the adoption of these practices among Dutch companies, in **general**, per industry, and related to the contingency **factors** that were identified in the literature. In addition, the survey asked non-adopters why they did not adopt target costing. The next section assessed the adopters' **objectives when** they adopted target costing and their **perception** of the benefits that they currently realized with it. Finally, the organization of their practices was grasped, by questions about the role of departments in the application of the **practice** and the organizational form used. A summary of the **specific** questions asked in the instrument is provided in appendix 1.

For **all** variables mentioned in the previous section, single item indicators were used for measurement, **except** for competition, for which two indicators were used. First, following Bjørnenak (1997), we use an indication of the number of competitors as a proxy for the **competitive** environment. The larger the number of competitors, the more **fierce** competition is expected to be. A **second** measure assesses the perceived intensity of competition. For variables for which multiple-item indicators do exist, **such** as **environmental** uncertainty, these would probably lead to better measurements. **However**, the use of single-item indicators was preferred in order to raise the response **rate**, by shortening the length of the questionnaire. This is particularly important **when** surveying a small population, which is the case in this study. **Where** possible, 7-point Likert scales were

used for measurement, where 1 represents “not at all”, and 7 represents “very much”. In addition, as the survey had exploratory purposes, much use was made of open questions, which gave the respondent the possibility to further react to issues that in his or her perception were important.

As some questions are based on the Tani *et al.* (1994) study, the results can to some extent be compared with their results for Japanese manufacturing companies. However, such a comparison should be made with care, as the Japanese study focuses on TCM, which is broader than only target costing, and many differences exist, such as in language, questions, setting, and sample characteristics.

The survey was pre-tested among three senior controllers of large manufacturing companies. After a minor adaptation, the survey was sent out in December 1996 to all listed manufacturing companies at the Dutch Amsterdam Stock Exchange. In the case when a (holding) company had one or more subsidiary companies, these were surveyed as well, as it is likely that knowledge about target costing practices is better known at the specific company level.⁵ In addition to manufacturing companies, the questionnaire was sent to all listed non-manufacturing organizations, except for financial, insurance and trading companies, in order to explore the assumption that target costing is not applicable to them. In total 175 questionnaires were sent out. As at the design of the study little knowledge was present about existing target costing practices in the Netherlands, it was difficult to ex-ante identify the most informative person to send the questionnaire to. Therefore, we built on the Tani *et al.* (1994) and the Horvath and Tani (1997) study that used both engineering and accounting functions as respondents. All companies were approached by telephone, to identify the head of the product development department. If such a function was unknown, then the name of the head of the R&D department was asked for. If this function was unknown, the head of the financial or accounting department was identified.

The questionnaire was then addressed to the **person** first identified by this exercise. If no **names** for these functions were identified, then the questionnaire was sent to both heads of product development and financial department, with an accompanying letter asking to forward it to the most informative **person**.

In total 43 out of 175 surveyed companies responded, which corresponds to an overall response **rate** of **24,6%**. The **final** sample of manufacturing companies consisted of 32 responses, which corresponds to a response **rate** of **21,8%**. A chi-square test of the **adop-tion** frequency of target **costing** between early and late respondents shows no significant differences. Mann-Whitney analyses showed no systematic differences between early and late respondents and between different types of respondents on the other variables **studied**.⁶ In addition, similar analyses were made to test for differences between the type of respondent (i.e., engineering type or accounting type of respondent). **Twenty-six** respondents informed about their function, of which fourteen were heads of product development and eight were management accountants / controllers (four others had different functions). **Also** the results of these analyses show little **evidence** of systematic differences.'

Eleven responses were **received** from the 28 non-manufacturing (service and construction) **firms**, which corresponds to a response **rate** of **39,3%**. None of these firms used target costing. The **main** reason provided for non-adoption was that it was not applicable to them, due to the **nature** of the company. **However**, we do not rule out the possibility that these firms **may** have had difficulty relating the target **costing** definition in the survey to their situation, and that different but related methods might be used in these industries. Further analyses are made for the manufacturing sample only.

Because of the limited sample size and inadequate distributional properties for most of

the variables for using parametric tests, non-parametric tests are used to analyze the data. It is important to recognize that the relatively small sample size reduces the statistical power of the tests used (i.e., the ability of the test to find significant effects, when they indeed exist), particularly for sub-sample analyses. Therefore, in order to increase statistical power of this exploratory study, and to obtain a more reasonable balance between the risks of having Type 1 and Type 11 errors, we follow Lindsay's recommendation to increase the significance level, and interpret the statistical results at the 10% level (Lindsay, 1993).⁸

4 Analyses and results

4.1 The adoption of target costing practices

In the survey a definition of target costing was provided, which the responding company could compare its system with. Target costing was defined as consisting of a costing method calculating the *maximum allowable costprice* by subtracting a *required profit margin* from the *expected sellingprice*. This allowed the respondent to be qualified as an adopter, even if he or she was unfamiliar with the concept of target costing or TCM, but did use a system consisting of similar elements. Nineteen respondents claimed to use a technique similar to the definition, which equals a 59,4% adoption rate for the manufacturing sample. We should note however, that non response bias could result in an overstatement of the real adoption rate, as there could be relatively more non-adopters among the non-respondents, who do not send back the questionnaire, for example because 'it is not relevant to them' (Guilding *et al.*, 2000). Despite the possibility that the real adoption rate will be somewhat lower, we consider this to be a fairly high adoption rate. This adoption rate is distributed across industries as shown in table 1.

Table 1

The adoption of target costing by industry

Industry	Target Costing			
	No use	Use	Total	% use
Food	3	1	4	25%
Textile	0	3	3	100%
Publishing/Paper	2	0	2	0%
Chemicals/Pharmaceuticals	4	4	8	50%
Rubber	0	1	1	100%
Steel	0	1	1	100%
Fabricated metals	3	1	4	25%
Electrical/electronics	0	5	5	100%
Transportation equipment	1		2	50%
Precision equipment (instruments/optical)	0	2	2	100%
Total	13	19	32	59,4%

Note: the industry classification is based on Tani et al. (1994).

Similar to Tani *et al.* (1994), especially the **electronics**, textile and precision equipment industries make relatively high use of these techniques. This confirms to expectations, as assembly industries are considered the most feasible industries for the use of target costing. Surprisingly, also the chemical industry shows a fairly high adoption rate.⁹

An open question was asked to examine how adopters name their system, in order to explore the diversity of **names** used. Only one respondent answered that the system used is actually called target costing. A wide range of other **names** and descriptions for their

system (or the practice in which the system is embedded, without explicitly naming the system), was provided by the respondents. These include “*basic net price*”, “*manufacturing cost reduction*”, “*pre-calculation*”, “*cost price monitoring*”, “*contribution margin maximization*”, “*benchmarking of cost structures of competitors*”, “*direct costs / feasibility study*” and “*cost reduction*”. This diversity of names used implies that many firms have developed a system based on similar principles as target costing, without being familiar with the concept and its principles. Therefore, in empirical research into these type of systems it seems sensible to focus on the characteristics of the system used, and not on its theoretical name.

In an open question two companies claimed that although their system is to a certain extent similar to the definition of target costing provided, it also shows differences. One textile company described to use product ‘*development on basis of minimum required value added*’. The respondent argued that target costing “*tends to result in lower quality, as it [the product] has to become cheaper*”. Therefore, the system is not [only] aimed at cost reduction, but at value added creation, as the company fears that a cost focus will harm a quality focus. In their opinion an important side-effect of their value added approach is that it produces insights into policy issues that can lead to improvements in competitiveness. The respondent argued that “[building on] *value added gives more insight into strategic issues which lead to an improvement of competitive position.*” In other words, they feel that using the concept of value added provides better insight into tradeoffs between the different goals of product development. A chemical bulk producer claimed its system differed from target costing in the calculation of its selling price, which is based on benchmarking of prices and cost structures with competitors. Their description of the system, however, is further similar to the definition of target costing provided in the survey.

One food company reports to “*only use the system under special circumstances, that is to*

testfor the feasibility of specialproducts. It is not usedfor the normalproduct range. "

The remainder of the respondents did not indicate that there were fundamental differences between their approach and the definition provided in the survey, or in the way of use.

We retained al responses for subsequent analysis, as their way of target cost calculation agrees with the definition provided in the survey.

Non-adopters were asked their reason(s) for not adopting target costing, which reasons are provided in table 2.

Table 2

Reasons for not adopting target costing

Due to the nature of the organization not well applicable	8
Unfamiliar with the method	2
Information gathering takes too much time	1
Analysis and reporting takes too much time	1
Method costs too much	1
Other reasons (open question)	2

The most important reason for not adopting these practices is that they are not considered useful, due to the nature of the organizations.¹⁰ An additional analysis shows this answer is not dependent on industry, as this reason has been provided by companies from all industries.

Mann-Whitney analyses were performed to compare adopters and non-adopters with respect to the contingency factors (competitive enviromnent, environmental uncertainty and the importance of cost focus in strategic product positioning), which were all measured on a 7-point Likert scale. As shown in table 3 a more unpredictable environ-ment (p = 0.06) and more intense competition (p = 0.09) seem to be related to the use of

these practices at the 10% level. Neither the number of competitors nor a cost focus were significantly related to the adoption.

Table 3

Contingency factors and the adoption of target costing

	n	Median
Number of competitors		
Adopters	19	5
Non-adopters	13	5
Mann-Whitney test: not significant (p = 0.905)		
Intensity of competition		
Adopters	19	6
Non-adopters	13	5
Mann-Whitney test: p = 0.090		
Predictability of the environment		
Adopters	19	5
Non-adopters	13	4
Mann-Whitney test: p = 0.063		
Cost focus		
Adopters	19	6
Non-adopters	12	5.5
Mann-Whitney test: not significant (p = 0.230)		

These results thus indicate that a more unpredictable environment and more intensive

competition can induce companies to adopt and develop practices resembling target costing, in order to better cope with these pressures.¹¹ Surprisingly, a cost focus does not seem to be related to the adoption decision.¹² Although the median for adopters is higher, the difference is statistically not significant.¹³ This result, however, can also be a result of the statistical power of the study. An explanation for the insignificance of the number of competitors is that this measure may include little information about the *intensity* of the competitive environment, which is theoretically most important.

4.2 The goals and benefits of target costing practices

As discussed earlier, during the product development process several goals have to be realized simultaneously, for which purpose target costing systems can be supportive. Different goals to be realized are high product quality, customer satisfaction by developing functional products that fulfil their needs, fast product introduction (time to market) and low costs. We first measured the degree of importance adopters attribute to these different goals for their adoption decision.¹⁴ Second, we measured the extent to which the system currently realizes benefits on these goals. Both goals and benefits were measured on a 1-7 Likert scale. The results are presented in table 4.

Table 4

The initial goals and current *benefits* of target costing

	<i>Initial Goals</i>	Current benefits
	<i>Median</i>	<i>Median</i>
Cost reduction	6 [*]	6 ^{**}
Timely product introduction	5	5
Customer satisfaction	5	5
Quality control	4	4

**A Wilcoxon Signed Ranks Test shows Cost reduction differs significantly from 2nd timely product introduction (p = 0.055) Customer satisfaction (p = 0.051), and Quality control (p = 0.005). Other differences are not statistically significant.*

***A Wilcoxon Signed Ranks Test shows Cost reduction differs significantly Timely product introduction (p = 0.006), Quality control (p = 0.002), and Customer satisfaction (p = 0.015). In addition, Timely product introduction differs significantly from Quality control (p = 0.049).*

Based on the literature we expected cost reduction to be the most important reason for adopting a target costing practice, as its main purpose is to introduce only profitable products to the market by attaining adequate cost levels. No expectations were formulated about the relative importance of the other three goals. The tables show that indeed the respondents perceived cost reduction as the most important goal when they adopted the system. The wish to introduce products timely, satisfy customer needs and control quality were ranked after cost reduction. We first performed a Friedman test (as a protection test) to assess whether for the total set of goals significant differences exist between the importance of the specific goals. This test shows that indeed significant differences exist (p = 0.017). Subsequently, Wilcoxon Signed Ranks Tests were used to identify the

specific significant differences. This analyses shows the importance of cost reduction as a goal to adopt target costing differs significantly on the 10% level from timely product introduction ($p = 0.055$), and customer satisfaction ($p = 0.051$), and at the 1% level from quality control ($p = 0.005$). The other differences between variables are not statistically significant at the chosen significance levels.

Table 4 further shows that the ranking of current benefits companies claim to have from their system equals the ranking of their initial goals. A Friedman test that was performed for the total set of benefits reveals that significant differences exist between specific benefits realized ($p = 0.001$). Wilcoxon signed Ranks Tests that were subsequently performed, show the current benefits with respect to cost reduction differ significantly at the 1% level from timely product introduction ($p = 0.006$), and quality control ($p = 0.002$), and from customer satisfaction ($p = 0.015$) at the 5% level. In addition, timely product introduction differs significantly from quality control at the 5% level ($p = 0.049$). Other differences between variables are not statistically significant.

Next it was assessed whether differences exist between the firms' current benefits of target costing and the goals the system was initially adopted for. Mann-Whitney tests revealed that the benefits of cost reduction were significantly higher at the 10% level than the initial cost reduction goal ($p = 0.054$). The other differences between specific goals and benefits were not statistically significant.

When comparing the results of these analyses to the Tani *et al.* (1994) study, several similarities and differences are found. First, similar to this study, cost reduction was found to be the most important goal when installing the system. However, the rest of their ranking differs from this study, as in their study quality ranks second, customer satisfaction third, and timely product introduction fourth.¹⁵ They found that the importance of all

goals had strongly increased **when** they focused on the present **objectives** of the system. For the ten German **companies** studied by Horvath and Tani (1997), the results are fairly similar to the Dutch sample, as cost reduction ranks first, market-oriented product **development** second, **lead-time** reduction third and quality fourth. **However**, in that study the **importance** of market-oriented product development increased strongly **after** the **imple-**
mentation of the system, which then **almost** equaled the **importance** of cost reduction.

4.3 The organization of target costing practices

The questions about the organization of target costing in the survey were related more to the TCM **process**. They measured the involvement of different functional departments in the application of target **costing**, and the organizational form used for the target **costing** practices.

The involvement of functional departments of the firm in the application of target costing was assessed by a 7-point Likert **scale**. Table 5 shows the medians and rankings of the involvement of functional departments in the target costing practices. In addition, a **com-**
parison is made with the ranking of the Tani **et** al. (1994) study, which is based on the *frequency* that the department is a member of the TCM team in their sample. TCM team membership is **also** a measure of involvement, although it is only informative about the **presence** of the department in the team, and not about the **degree** of involvement.

Table 5

The involvement of departments in the application of target costing

Department	N	Median	Rank	Tani et al.
Product development*	19	7	1	4
Product design**	18	7	2	1
Purchasing	19	6	3	3
Manufacturing	19	5	4	6
Marketing	19	5	5	5
Sales	19	5	6	
Product planning	18	4	7	7
Finance/accounting	19	4	8	8

* Wilcoxon Signed Rank Tests show that the involvement of Product development differs significantly from Product design at the 10% level (p = 0.084) and from the other departments at the 1% level.

** Wilcoxon Signed Rank Tests show that the involvement of Product design differs significantly from the following departments at the 1% level. Other differences are not statistically different.

A Friedman test that was performed shows significant differences between the involvement of the several functional departments in the application of the target costing practice (p <0.000). A Wilcoxon Signed Ranks Test that was subsequently performed reveals that the involvement of the Product Development department differs significantly from the Product Design department at the 10% level (p = 0.084) and at the 1% level from all other departments. The Product Design department is significantly more involved than all other lower ranked departments at the 1% level. The involvement of the other departments is not significantly different from the *next ranked* department.

The most notable difference with the Tani *et al.* (1994) study is the high involvement of the Product Development department, which ranks even higher than the Product Design department. In both countries the TCM efforts seem to be mainly engineering driven, while the results suggests that the involvement of the accounting department is relatively low.¹⁶ This is in sharp contrast to the ten German companies studied by Horvath and Tani (1997), in which management accountants or controllers had a significant role.

A shortcoming when comparing this study to the study by Tani *et al.* (1994), is that this study did not assess the importance of the Product Technology department. They found the importance of this department to rank second in their sample. However, the pretest of the questionnaire revealed that the Dutch respondents did not have such a department, were unfamiliar with it and got confused when it was included. Therefore, it was chosen to leave it out.

Subsequently, it was assessed what organizational form the firms use for their target costing practices. Table 6 shows the majority of target costing adopters use multi-disciplinary team structures. Three companies answered that target costing was applied by the controller's staff, however, two of them also reported the use of interdisciplinary teams. Therefore, we suspect the management accounting function to be a part of these teams. A few companies further reported the use of rules and regulations for the application of target costing (2), a separate target costing department with a team structure (1), the use of the accounting department for target costing (1), and the use of other organizational provisions (2).¹⁷

Table 6

The organization of target costing

Team	14
Controller's staff	3
Rules and procedures	2
Target costing department	1
Accounting department	1
Other	2

5 Conclusion and directions for future research

This exploratory survey study suggests Dutch listed manufacturing companies make relatively high use of costing techniques similar to the concept of target costing, although these systems come by in a diversity of names. These techniques are adopted across industries, of which the assembling industries are the major users. The findings suggest that these techniques are relatively more often adopted under circumstances of intense competition and high environmental uncertainty, for which conditions, according to the literature, the use of target costing is beneficial. The results suggest that the main objective for adopting these techniques was to reduce costs. This goal seems to have been achieved by respondents, as the major benefit derived from the target costing practices was cost reduction. The departments Product Development and Product Design are most heavily involved in the application of target costing, while the Accounting department seems to be least involved. The firm's target costing efforts are mainly organized in team structures, in which knowledge and capabilities of different organizational functions are combined to work on the target cost.

An attempt was made to compare the Dutch practices with Japanese practices identified

from the survey of Tani *et al.* (1994), which led to several similarities and differences. Due to the nature of survey research, we cannot say much about the *why* of these differences and similarities between the studies, for now we can only observe them. In addition, caution is warranted in making such a comparison, because as argued by McMann and Nanni (1995: 333) “any comparison between Western and Japanese practices should, at a minimum, include some acknowledgement of the different assumptions, challenges and management philosophies under which the techniques are being employed” Wijewardena and De Zoysa (1999), for instance, provide an overview of some specific characteristics of Japanese companies under which the management accounting systems operate, consisting of collective decision making, unique company philosophies, subcontracting strategies, and the firm-specific education and training of management accountants. It will be clear that in this exploratory analysis it will be difficult to touch upon these issues. Qualitative research may be a preferred research methodology to extend the analysis to these issues.

From this research we can conclude that Dutch listed manufacturing firms use costing techniques that are similar to the concept of target costing; the costing method identifies a target cost by subtracting a required profit margin from an expected selling price. However, this study provides little insight into the actual organizational processes and actions that precede, and are initiated by these target costs (i.e., target cost management). An important direction for future research is therefore to assess the actual processes and methods of cost management by firms using such costing techniques. Detailed case research would enable to investigate the exact content and working of these systems, and would permit more detailed comparisons with the Japanese use of target costing.

Another important direction for future research is to perform target costing studies for manufacturing companies in other Western countries, in order to compare adoption rates,

and the characteristics of these systems. In future studies focusing on the adoption and diffusion of target costing, researchers could try to identify a broader set of reasons for adopting these systems. These need not only exist of “efficient choice” reasons, as studied in this paper, but, analogous to some diffusion of activity-based costing studies, also could exist of other motives, such as fad and fashion perspectives (Bjørnenak, 1997; Malrni, 1999). In addition, the role and importance of the target costing system in relation to the use of other management accounting systems will be worthwhile studying, as the recent survey research by Chenhall and Langfield-Smith (1998) and by Guilding *et al.* (2000) has shown only modest appreciation for target costing systems by Western firms.

6 References

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7. Notes

¹ McMann and Nanni (1995) provide an extensive overview and analysis of the literature on Japanese management accounting until 1994.

² The Tani *et al.* (1994) study, however, was broader than our study, as it also focused on the target cost management process, which we do not.

³ These adoption rates should however be interpreted and compared with each other with caution, as differences exist between the studies in description and wording of the content of target costing between studies.

⁴ The competitive environment can be a source of environmental uncertainty, however, it is not the only source. Other sources, for instance, relate to technological innovation and the diversity of consumer needs (Tani, 1995).

⁵ No multiple responses from the same company were received.

⁶ One variable 'customer satisfaction benefits' differed significantly between early and late respondents at the 10% level. Regarding the large number of variables analyzed, these results could have been a result of chance, which may be more plausible as no other significant differences were found.

⁷ One variable, 'intensity of competition', differed significantly between these functions at the 5% level, indicating that the heads of product development perceive the competitive environment of their firm more intense than the management accountants do. Similar to footnote 6, this could have been the result of chance.

⁸ The problem of finding effects which in reality do not exist (and thereby incorrectly rejecting the null hypothesis of no effect, that is, a Type 1 error) can be of even serious nature as not finding an effect when it in fact does exist (and thereby falsely not rejecting the null hypothesis, that is, a Type 11 error). Therefore, sacrificing some statistical significance for power can improve the informativeness of the study, which can be of particular benefit for exploratory studies. For example, expected relationships may not

be found due to a **lack** of power, and as a **result receive less** attention in future research, while in fact they do **deserve** to.

⁹ An explanation of Tani *et al.* (1994) for the use of TCM in **process** industries is that diversified **firms** use it for assembled products, some firms use it for the product package, and some firms use it for **material** blending and selection of energy and catalysers in the product development stage.

¹⁰ Two (mass) food **companies** provided an additional explanation to this reason. They argue that in their situation the costs of individual products do not differ **much**, and are not the most important. For them the **real** cost components are related to brand support, more specifically sales and marketing costs.

¹¹ Correlation analyses show low and insignificant correlations between these four antecedent variables, thus they do not measure a similar construct.

¹² In addition to a **cost** focus, the questionnaire also measured the **importance** of the profit margin and the sales price when positioning the product in the market, as these components of the target cost formula **can** be a driver for a cost focus (i.e., to realize a certain **profit** margin or to be able to offer against a certain **selling** price, costs need to be managed more or **less** aggressively). Both **importance** of **profit** margin ($p = 0.459$), and **importance** of **selling** price ($p = 0.823$) were unrelated to the adoption of target costing.

¹³ An additional analysis shows that this **result** is independent from the reason for not adopting target costing, as both high and low scoring respondents on the item 'Cost focus' motivated their non-adoption by the **nature** of their organization.

¹⁴ We recognize that **asking** respondents about their motives of the past **can** be problematic, because of problems of recalling, and as respondents could attribute the *current* goals or **benefits** of the system to the question. Therefore, it should be **recog-**nized that this question might not **fully capture** the reasons for adoption at that moment in **time**, and that results **can** to some extent be biased to the current situation. This is a

general concern in research **when** using questions reflecting on the past.

¹⁵ Strictly, we cannot speak about a **difference** in ranking of these three objectives, as in our sample no statistical differences are found between them. In addition, **making** a comparison with Tani *et al.* (1994) is difficult, as they do not test for **significance** of the differences.

¹⁶ We should note, **however**, that it is not **clear** whether the departments in table 5 **represent** comparable organizational units **across** countries.

¹⁷ The two respondents in the “other” category described target **costing practices** to be applied “*within the product (**market**) group*”, and “*in the goals of the development project*”.